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CENTRAL FAX CENTER

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Application No.10/535,125
Amendment dated April 19, 2010
Reply to Office Action of January 19, 2010
Attorney Docket No. 18062

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A hydraulic steering device for centre pivot steered vehicles with a centre point steering joint, between major ground-engaging components of the vehicles, comprising:

at least one hydraulic swiveling motor for producing the steering movement;
a hydraulic pump with a variable flow rate and reversal of the direction of delivery, the pump in fluid flow communication with the at least one swiveling motor;
the at least one swiveling motor further being a swiveling vane motor that is in the form of a centre pivot steering joint of the centre point-steered vehicle or is arranged in the rotary axis of the centre point steering joint of the vehicle, the at least one swiveling motor having at least one fixed first vane and ~~at least one moveable vane~~, the ~~at least one fixed vane~~ being fixed in relation to the first ground-engaging component, and [[the]] at least one moveable vane ~~being~~ fixed in relation to the second ground-engaging component and wherein the at least one moveable vane pivots about the rotary axis with respect to the first ground engaging component.

2. (previously presented) The steering device of claim 1, wherein: the variable flow pump with reversal of its delivery direction is also a constant displacement pump, and

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configured to be drivenly coupled to a controlled variable speed electric motor.

3. (currently amended) The steering device of claim 1, wherein: the variable flow pump with reversal of its delivery direction is a variable displacement axial piston pump with a swashplate, wherein the position of the swashplate with respect to pistons of the pump controls the direction and displacement of the pump.

4. (previously presented) The steering device of claim 1, wherein: at least one additional swiveling motor is arranged on an opposite side of the centre point steering joint from the at least one swiveling motor, wherein both motors are located along the rotary axis.

5. (previously presented) The steering device of claim 2, wherein: the at least one swiveling motor is arranged above and/or beneath the centre point steering joint along the rotary axis.

6. (currently amended) The steering device of claim ~~[[3]]~~ 1, wherein: the at least one swiveling motor has at least a first and second chamber in fluid connection with a first and second outlet of the pump and is arranged above and/or beneath the centre point steering joint along the rotary axis directly connected to the chambers of the pump such that running the pump in a first direction delivers a pressure to the first chamber steering the vehicle in a first direction and running the pump in a second direction delivers a

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pressure to a second chamber for steering the vehicle in a second direction.

7. (original) The steering device of claim 1, further including: an electronic controller connected to and controlling the direction and displacement operation of the pump.

8. (currently amended) The steering device of claim 7, wherein: the electronic controller is configured to receive a steering signal from the operator, wherein the controller is configured to convert the signal to a corresponding displacement volume and either the first or second direction of flow of the pump, and transmit a signal to an adjusting actuator connected to the swashplate, to change the swashplate to a position corresponding to the determined displacement volume and direction ~~a micro-processor.~~

9. (previously presented) The steering device of claim 2, further including: sensors configured to record steering angle and further system parameters of state are positioned on the at least one motor.

10. (previously presented) The steering device of claim 3, further including: sensors configured to record the steering angle and further system parameters of state are positioned on the at least one motor.

11. (currently amended) The steering device of claim ~~[[8]]~~ 7, further including: sensors

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for recording the steering angle and further system parameters of state are positioned on the at least one motor.

12. (previously presented) The steering device of claim 7, further including: a joystick connected to said electronic control element for setting the steering angle of the vehicle.

13. (original) The steering device of claim 12, wherein the joystick includes a force-feedback function.

14. (currently amended) The steering device of claim 11, further including: a joystick connected to said electronic controller for setting the steering angle.

15. (original) The steering device of claim 14, wherein the joystick includes a force-feedback function.

16. (canceled)

17. (previously presented) The steering device of claim 11, further including: a set angle prescribed by the operator is recorded in the micro-processor, and depending upon that the quantity and direction of the volume flow to the at least one hydraulic steering motor is influenced.

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18. (original) The steering device of claim 17, wherein: the actual angle of the steering device is recorded in the micro-processor and the volume flow to the steering motor is controlled by a control algorithm which is selectively variable depending upon the operating state of the vehicle, in particular a steering angle control and/or a steering angle velocity controller.

19. (currently amended) The steering device of claim 1, wherein:

the swiveling motor is positioned ~~[[in]]~~ inside of the joint such that a turning axle rigidly connected to ~~connecting-section of~~ the first ground engaging component of a vehicle runs through the swiveling motor that is rigidly mounted to a second part of the vehicle and bearing points of the swiveling motor form a turning bearing between the first and the second ground engaging component of the vehicle.

20. (new) The steering device of claim 1, wherein two connection of the hydraulic pump with a variable flow rate are directly connected with two unions of the swiveling vane motor in a first circuit such that every change at an adjusting actuator of the pump causes an inflow to one of the unions and an outflow from the other union; and

the hydraulic pump with a variable flow rate and reversal of the direction of delivery mechanically by a driving mechanism that powers a second hydraulic pump located in a second circuit configured to draw fluid from a reservoir for supplying the

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second circuit, wherein at least one check valve permits the flow of fluid from the second circuit to the first circuit.